



**Sekolah Siswazah
(Graduate School)
Universiti Utara Malaysia**

**PERAKUAN KERJA KERTAS PROJEK
(Certification of Project Paper)**

Saya, yang bertandatangan, memperakukan bahawa
(I, the undersigned, certify that)

Ooi Bee San

calon untuk Ijazah

(candidate for the degree of) Sarjana Sains (Teknologi Maklumat)

telah mengemukakan kertas projek yang bertajuk

(has presented his/ her project paper of the following title)

E-Procurement For SMI

seperti yang tercatat di muka surat tajuk dan kulit kertas projek
(as it appears on the title page and front cover of project paper)

bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan,
dan meliputi bidang ilmu dengan memuaskan.

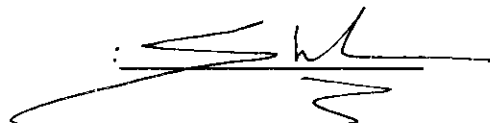
(that the project paper acceptable in form and content, and that a satisfactory
knowledge of the field is covered by the project paper).

Nama Penyelia

(Name of Supervisor) : Prof. Madya Shahrums Hashim

Tandatangan

(Signature)

: 

Tarikh

(Date)

: 8 Oktober 2001

PERMISSION TO USE

In presenting this thesis in partial fulfilment of the requirements for a post graduate degree from the Universiti Utara Malaysia, I agree that the University Library may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor(s) or, in their absence, by the Dean of the Graduate School. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my thesis.

Requests for permission to copy or to make other use of material in this thesis in whole or in part should be addressed to :

**Dean of Graduate School
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman**

ABSTRACT(BAHASA MALAYSIA)

Perdagangan B2B (B2B) berasaskan internet sedang merevolusikan cara perniagaan di antara organisasi. Perniagaan perolehan telah muncul sebagai panduan penting untuk revolusi B2B ini. Perkhidmatan perolehan atas talian, atau e-perolehan, yang telah mengautomasikan semua atau sebahagian daripada proses tuntutan-kepada-penyelesaian dan penegasan strategik yang baru kepada fungsi pembelian telah menjadikan e-perolehan topic yang paling kerap diperkatakan di perdagangan Internet kini.

Perolehan barang-barang dan perkhidmatan adalah suatu sumber kekecewaan dan tidak efisien di segi kos dalam banyak organisasi akibat terus bergantung pada cara pengenalan yang tidak efisien. e-Perolehan berjanji untuk mengubah proses pembelian secara dramatik, yang membuatnya lebih cepat, dan mengurangkan kos yang amat tinggi serta menaikkan kecekapan. Proses penyelesaian e-perolehan dapat menolong organisasi dalam pengurusan secara menyeluruh dan pentadbiran yang melibatkan perolehan barang-barang dan perkhidmatan, dan pada masa yang sama menggalakkan sumber yang sebaiknya.

Salah satu projek perintis *e-government* Malaysia, e-Perolehan, dengan secara rasmi akan mengambil alih pendaftaran daripada 28,000 orang pembekal di seluruh negara itu, sebaik sahaja sistem dan infrastruktur itu bersedia. Kebanyakan kecil dan sederhana perniagaan tidak memberi perhatian kepada automasi perolehan dalam mengendalikan operasi sumber, seperti bekalan pejabat, telefon, penghantaran cepat, pengembaraan dan hiburan, dan cetakan dan penerbitan. Kos ini adalah sebahagian besar daripada hasil menyeluruh, kebanyakan syarikat tidak menyedari modal yang telah dilaburkan dalam inventori dan dalam pengurusan harta operasi.

Projek ini berkenaan dengan mentakrifkan dan membangunkan suatu sistem e-perolehan yang akan menolong kumpulan SMI memperkemas proses pembelian. Proses penyelesaian perolehan yang digunakan untuk projek ini adalah berdasarkan kepada konsep penukaran sulit. Ia adalah unggul untuk kumpulan SMI dan membekalkan peluang untuk organisasi dalam mendirikan masyarakat mereka sendiri. Matlamat muktamad projek ini adalah untuk mentakrifkan semula dan memperkemas proses perolehan untuk bahan tidak langsung dan mendapat suatu cara yang lebih berkesan dalam menghubungkan pembeli kepada penjual dan memperbaiki kecekapan proses pembelian. Terlebih dahulu, kertas ini menyampaikan konsep e-perolehan secara menyeluruh, diikuti dengan penyelesaian alternatif e-perolehan yang telah dilaksanakan di dalam bidang ini.

Suatu kajian kes telah diadakan di sebuah syarikat terpilih SMI untuk melanjutkan kefahaman terhadap pengendalian dan mengecam kawasan yang berpotensi untuk menggunakan sistem e-perolehan. Sistem analisis akan

menegaskan keperluan perniagaan proses perolehan dan mengecam perihal had syarikat SMI dalam persediaan untuk pelbagai penyelesaian perusahaan. Rekabentuk sistem berkenaan bukan sahaja merekabentuk sistem yang dicadangkan tetapi mendefinisikan semula proses semasa dan operasi perolehan di syarikat SMI. Sebagai tambahan, pendekatan terhadap e-perolehan bergantung pada struktur organisasi dan industri yang bersaing. Perkaedahan struktur sistem analisis dan rekabentuk digunakan untuk menganjurkan kaji penuh tentang sistem yang dicadangkan. Akhir sekali, model e-perolehan untuk kumpulan SMI akan dicadangkan dan dipaparkan.

ABSTRACT (ENGLISH)

Internet-based business-to-business (B2B) commerce is revolutionizing the way business is conducted between organizations. Business procurement has emerged as the key driver of this B2B revolution. Online procurement services, or e-procurement, that automate all or part of the requisition-to-settlement processes and the new strategic emphasis on the purchasing function has made e-procurement the hottest area of Internet commerce today.

The procurement of goods and services is a source of frustration and costly inefficiency in many organizations due to continue reliance on inefficient manual, paper-based processes. E-Procurement promises to change the purchasing process dramatically, making it faster, cheaper and result in huge cost savings and increased efficiency. E-Procurement solutions can help organizations to manage the entire workflow and administration involved in procuring goods and services and at the same time encourage better sourcing and supply management.

One of the Malaysia's pioneer e-government projects, e-procurement, will officially take over the registration of the government's 28,000 suppliers nationwide as soon as the system and infrastructure are ready. Most small to medium enterprises however, have paid little attention to the automation and integration of purchasing operating resources, such as office supplies, telephones, overnight delivery, travel and entertainment, and printing and publishing. These costs are often a greater portion of total revenue, additionally most companies do not realize how much capital is invested in the inventory and management of operating assets.

This project is concerned with defining and developing an e-Procurement system that would help the SMI companies to streamline the purchasing process. The procurement solution adopted for this project is based on the concept of private exchange. It is ideal for SMI companies and provides the opportunity for the organizations to create their own community. The ultimate goal of this project is redefining and streamlining the procurement process for indirect material and to find a more effective way to connect buyers to sellers and improving the efficiency of the purchasing process. Firstly, the paper presents the overall concepts of e-procurement, followed by the alternative e-procurement solution that had been implemented in the market. A case study is conducted for a selected SMI company to further understand the operation and identify the potential areas of utilizing the e-procurement system. System analysis will emphasize on the business requirement of the procurement process and identify the limitations of the SMI companies in terms of the availability of various enterprise-wide solutions. System design is concerned not only with designing

the new proposed system but to redefine the current process and practice of procurement in the SMI companies. In addition, company approaches to e-procurement depends on the structure of the organization and the industry it competes in. Structured system analysis and design methodology is used to conduct the full study of the proposed system. Lastly, a proposed e-procurement model for the SMI companies will be developed and presented.

ACKNOWLEDGEMENTS

I would like to take this opportunity to extend my sincere gratitude and appreciation to my supervisor, Professor Madya Shahrum Hashim for his valuable advice, encouragement and guidance throughout the course of this project.

I would like to thank the managers and staffs of Rhythm Distributor Sdn. Bhd. for their co-operation during the facts-finding stage and provide all the relevant information necessary for the development of the system.

Finally, I would like to thank all my friends and course mates who have contributed in one way or another to the completion of this project.

OOI, BEE SAN

Table Of Contents

	Page
PERMISSION TO USE	I
ABSTRACT(BAHASA MALAYSIA).....	II
ABSTRACT (ENGLISH)	IV
ACKNOWLEDGEMENTS	VI
CHAPTER ONE : INTRODUCTION	1
1.1 E-COMMERCE.....	1
1.2 E-PROCUREMENT	1
1.3 PROBLEM STATEMENT	2
1.3.1 B2B In Malaysia	2
1.3.2 e-Procurement Supplier.....	4
1.4 OBJECTIVES.....	6
1.5 SCOPE OF STUDY	7
1.6 SIGNIFICANT OF THE STUDY.....	8
CHAPTER TWO : LITERATURE REVIEW	10
2.1 PURCHASING PROCESS TRANSFORMATION.....	10
2.2 E-PROCUREMENT SOLUTION	11
2.2.1 Electronic Data Interchange.....	11
2.2.2 Enterprise Resource Planning	11
2.2.3 Sell-Side Storefront.....	12
2.2.4 Buy-side e-Procurement.....	12
2.2.5 B2B Marketplace	13
2.3 E-PROCUREMENT PROCESSES.....	13
2.4 E-PROCUREMENT IN MALAYSIA.....	14
2.4.1 ePerolehan	14
2.4.2 B2B Private Exchange	17
CHAPTER THREE : PROJECT METHODOLOGY.....	19
3.1 Preliminary investigation	19

3.2	System Analysis.....	20
3.3	System Design.....	20
3.4	System Implementation.....	21
3.5	Maintenance	21
CHAPTER FOUR : PRELIMINARY INVESTIGATION.....		22
4.1	PROJECT REQUEST	22
4.2	PROJECT CLARIFICATION	23
4.2.1	Interview	23
4.3	DETAILED INVESTIGATION	25
4.4	FEASIBILITY STUDY	25
4.4.1	Technical Feasibility	26
4.4.2	Economic Feasibility.....	26
4.4.3	Operational Feasibility	27
4.5	REPORT FINDINGS	27
4.5.1	Benefits	28
4.5.2	Size Of Project	28
4.5.3	Assess Costs.....	28
CHAPTER FIVE : SYSTEM ANALYSIS		30
5.1	DESCRIPTION OF EXISTING SYSTEM	30
5.1.1	Requester.....	30
5.1.2	Purchasing Department	31
5.1.3	Finance Department	33
5.1.4	Management.....	33
5.1.5	Reporting.....	34
5.1.6	Computer System.....	35
5.2	DATA FLOW DIAGRAM.....	35
5.2.1	Order Processing	35
5.2.2	Purchase Requisition.....	38
5.2.3	Approval.....	39
5.2.4	Purchase Order	41
5.2.5	Goods Receive	42
5.2.6	Payment.....	43

5.2.7 Reporting Process.....	44
5.3 PROBLEM DEFINITION & IDENTIFICATION	45
5.4 SOLUTION TO PROBLEMS	46
5.4.1 Objective	47
5.4.2 Functions & Features	48
CHAPTER SIX : SYSTEM DESIGN	50
6.1 HARDWARE & SOFTWARE	50
6.1.1 System Layout.....	50
6.1.2 System Requirement	51
6.1.3 Security	52
6.2 MODULAR DESIGN	54
6.2.1 Catalogue management or e-Catalogue	54
6.2.2 Supplier Profile Management	54
6.2.3 Procurement Processing	55
6.2.4 Order Fulfillment	55
6.2.5 Integration	56
6.2.6 Report.....	56
6.3 REQUIREMENT SPECIFICATION	57
6.3.1 Catalogs Management.....	57
6.3.2 Supplier Management	62
6.3.3 Approval Rule	65
6.3.4 Purchase Requisition Processing.....	70
6.3.5 Purchase Order Processing.....	71
6.3.6 Receiving Process	72
6.3.7 Payment Process.....	74
6.4 ENTITY RELATIONSHIP DIAGRAM	75
6.4.1 Entity Description	76
6.5 OUTPUT DESIGN.....	80
6.5.1 Report Name : Purchase Order	80
6.5.2 Report Name : Central Purchase Details.....	81
6.5.3 Report Name : Goods Receive Note	82
6.5.4 Report Name : Purchase Requisition	83
6.5.5 Report Name : Consolidated Monthly Purchase Report.....	84

6.5.6	Report Name : Catalog Report By Supplier.....	85
6.5.7	Report Name : Catalog Exceptional Report By Supplier.....	86
6.6	DATA DICTIONARY	87
6.6.1	Supplier	87
6.6.2	Location.....	88
6.6.3	Table Name : Login	88
6.6.4	Parameter.....	89
6.6.5	Catalog	90
6.6.6	TempCatalog.....	91
6.6.7	LiveCatalog.....	92
6.6.8	Tier_Price.....	94
6.6.9	GRN (Goods Receive Notes).....	94
6.6.10	Class.....	95
6.6.11	POMaster (Purchase Order Master Table).....	96
6.6.12	PODetail (Purchase Order Detail Table).....	97
6.6.13	PRMaster (Purchase Requisition Master Table).....	98
6.7	PROCESS REDESIGN.....	100
6.7.1	Supplier Management	100
6.7.2	Supplier Login Access	102
6.7.3	Catalog Management	104
6.7.4	Purchase Requisition.....	108
6.7.5	Purchase Order.....	112
6.7.6	Receiving Process	116
6.7.7	Payment Process.....	119
6.8	PROCESS HIERARCHY.....	122
6.8.1	Process Description.....	122
6.9	SCREEN DESIGN	126
6.9.1	Screen Flow.....	126
6.9.2	Screen Layout.....	127
6.10	PROGRAM LOGIC.....	129
6.10.1	Login Validation Process	129
6.10.2	Login Maintenance.....	130

CHAPTER SEVEN : CONCLUSION.....	132
7.1 CONSTRAINTS	135
7.2 FURTHER STUDY	136
APPENDIX A – SAMPLE FORMS.....	139
APPENDIX B – TABLE RELATIONSHIP DIAGRAM.....	141
APPENDIX C – SCREEN FLOW.....	143
APPENDIX D – SCREEN LAYOUT	155
APPENDIX E- PROGRAM LOGIC	165
APPENDIX F –PROGRAM LISTING	182
REFERENCE.....	439

LIST OF FIGURES

Figure 2.1 Purchasing Process Transformation	10
Figure 5.1 Context Diagram for the Order Processing.....	37
Figure 5.2 DFD Level 1 For the Purchase Requisition.....	39
Figure 5.3 DFD Level 1 For the Approval Process	40
Figure 5.4 DFD Level 1 For the Purchase Order	41
Figure 5.5 DFD Level 1 For the Goods Receive	42
Figure 5.6 DFD Level 1 For the Payment.....	43
Figure 5.7 DFD Level 1 for the Reporting Process	44
Figure 6.1 Layout for the e-Procurement System	50
Figure 6.2 Entity Relationship Diagram.	75
Figure 6.3 Purchase Order Format.....	80
Figure 6.4 Central Purchase Details Report Format	81
Figure 6.5 Goods Receive Note Format.....	82
Figure 6.6 Purchase Requisition Format.....	83
Figure 6.7 Consolidated Monthly Purchase Report.....	84
Figure 6.8 Catalog Report By Supplier.....	85
Figure 6.9 Catalog Exceptional Report By Supplier.....	86
Figure 6.10 Data Dictionary For Supplier.....	87
Figure 6.11 Data Dictionary For Location.....	88
Figure 6.12 Data Dictionary For Login.....	89
Figure 6.13 Data Dictionary For Parameter	90
Figure 6.14 Data Dictionary For Catalogue	91
Figure 6.15 Data Dictionary For TempCatalogue.....	92
Figure 6.16 Data Dictionary For LiveCatalog	93
Figure 6.17 Data Dictionary For Tier Price	94
Figure 6.18 Data Dictionary For Goods Receive Notes	95
Figure 6.19 Data Dictionary For Class	95
Figure 6.20 Data Dictionary for Purchase Order Header.....	97
Figure 6.21 Data Dictionary For Purchase Order Detail.....	98
Figure 6.22 Data Dictionary For Purchase Requisition	99

Figure 6.23 Supplier Management Process Flow	101
Figure 6.24 Supplier Login Access.....	103
Figure 6.25 Catalog Management Process Flow.....	107
Figure 6.26 for Purchase Requisition Process Flow	111
Figure 6.27 Purchase Order Generation Process Flow	115
Figure 6.28 Receiving Process.....	118
Figure 6.29 Payment Process Flow.....	121
Figure 6.30 Process Hierarchy Chart	122
Figure 6.31 Screen Flow	126
Figure 6.32 - 1.0 Login Screen.....	127
Figure 6.33 – 2.0 Main Menu.....	128
Figure 6.34 Login Validation Process.....	129
Figure 6.35 Login Maintenance	130

CHAPTER ONE : INTRODUCTION

1.1 e-Commerce

Electronic Commerce has emerged as a new business model, which leverages the power of the Internet to offer business opportunities. Its borderless nature means that companies can gain access to a worldwide market to promote their products and services. For smaller companies, the e-commerce model also offers what is considered a more level playing field to compete with bigger and more financially sound competitors. The Internet has, over a short period of time, changed the traditional business models, and accelerated business cycles. Businesses will shift from attracting customers to websites to using the Internet as a tool to give the customers the information they want, regardless of when, where and how.

1.2 e-Procurement

The global Electronic Commerce revolution is entering a new phase. While the first stage was fueled by the vision and innovation of business-to-consumer Internet companies, the next phase will be defined by the leadership and market success of companies engaged in business-to business Electronic Commerce. Business procurement has emerged as the key driver of this B2B revolution.

The contents of
the thesis is for
internal user
only

Reference

B2B Marketplaces in the New Economy,

http://www.ariba.com/solutions/solutions_overview.cfm#

Is e-procurement for everyone ?, ComputerWorld-Issue No2, August 2001

Samuel Greengard. Buying Into E-Procurement, September 2000,

[http://www.businessfinancemag.com/archives/appfiles/Article.cfm?IssueID=329
&ArticleID=13619](http://www.businessfinancemag.com/archives/appfiles/Article.cfm?IssueID=329&ArticleID=13619)

The Case For e-Procurement : How Automating Procurement Adds to the Bottom Line,

http://www.marrakech.com/gcn/whitepaper.html#the_case_for_e-procurement

The Promise And Pitfalls of B2B e-Commerce, ComputerWorld-Issue No 7, May 2001